

CLAIMS:

1. An electrophoretic display panel (1), for displaying a picture corresponding to image information, comprising:

-a plurality of pixels (2), each containing an amount of an electrophoretic material comprising a first and a second type of particles (6, 7), having mutually different charges,
5 being dispersed in a fluid (11);

-a first and a second electrode (8, 9) associated with each pixel (4) for receiving a potential difference as defined by an update drive waveform; and

-drive means (10), for controlling said update drive waveform of each pixel (4);

wherein the charged particles (6,7), depending on the applied update drive waveform, are
10 able to occupy a position being one of extreme positions near the electrodes (8,9) and intermediate positions in between the electrodes (8,9) for displaying the picture, and wherein said update drive waveform comprises:

-a reset portion (R), during which a reset signal is applied over the pixel, and subsequently

-a driving portion (D), during which a picture potential difference is applied over the pixel for
15 enabling the particles (6, 7) to occupy the position corresponding to the image information, characterized in that

said reset portion (R) of the update drive waveform is configured so that the first and second types of particles (6,7) are brought in close proximity with each other during said reset portion (R) of the update waveform.

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2. An electrophoretic display panel (1) as in claim 1, wherein the reset signal applied in said reset portion (R) comprises a first signal portion (R1) and a subsequent second signal portion (R2).

25 3. An electrophoretic display panel as in claim 1 or 2, wherein the said reset portion (R) is configured so that it is bi-polar, i.e. comprises only a first and a second, subsequent reset signal portion (R1 and R2, respectively), one of said signal portions being a positive pulse and the other one being a negative pulse.

4. An electrophoretic display panel as in claim 3, wherein the update drive waveform further comprises at least one shaking portion (S), and wherein said positive and negative reset signal portion each has a duration that is longer than said at least one shaking portion (S).

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5. An electrophoretic display panel as in claim 1, 2 or 3, wherein said first reset signal portion (R1) is shorter than said subsequent second reset signal portion (R2).

6. An electrophoretic display panel as in any one of the claims 2-5, wherein said first pulse is arranged to move said first and a second type of particles (6, 7) in a direction away from the extreme positions.

7. An electrophoretic display panel as in any one of the claims 2-6, wherein the duration of the first signal portion (R1) is chosen so that the total duration of that reset portion equals the length of the longest monopolar reset portion needed for a transition in the pixel.

8. A method for driving an electrophoretic display device, the device comprising
-a plurality of pixels (2), each containing an amount of an electrophoretic material
comprising a first and a second type of particles (6, 7), having mutually different charges,
being dispersed in a fluid (11);
-a first and a second electrode (8, 9) associated with each pixel (4) for receiving a potential difference; and
-drive means (10), for controlling said potential difference of each pixel (4);
wherein the charged particles (6,7), depending on the applied potential difference, are able to occupy a position being one of extreme positions near the electrodes (8,9) and intermediate positions in between the electrodes (8,9) for displaying the picture, and wherein said potential difference is controlled to be:
-during a reset portion (R), a reset potential difference for enabling particles (6,7) to substantially occupy one of the extreme positions, and subsequently
-during a driving portion (D), a picture potential difference for enabling the particles (6, 7) to occupy the position corresponding to the image information,
the method comprising the steps of:
-during said reset portion (R) applying a reset signal over said pixel (4), during which the

first and second type of particles are brought in close proximity with each other.

9. A method according to claim 8, wherein the reset signal applied in said reset portion (R) comprises a first signal portion (R1) and a subsequent second signal portion (R2).

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10. A method according to claim 8 or 9, wherein said reset signal of said reset portion (R) is configured so that it is bi-polar, i.e. comprises only a first and a second, subsequent reset signal portion (R1 and R2, respectively), one of said signal portions being a positive pulse and the other one being a negative pulse.

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11. A method according to claim 9 or 10, wherein the update drive waveform further is arranged to comprise at least one shaking portion (S), and wherein said positive and negative reset signal portion each is arranged to have a duration that is longer than said at least one shaking portion (S).

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12. A method according to claim 9, 10 or 11, wherein said first reset signal portion (R1) is shorter than said subsequent second reset signal portion (R2).

13. A method as in any one of the claims 9-12, wherein said first pulse is arranged to move said first and a second type of particles (6, 7) in a direction away from the extreme positions.

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14. A method as in any one of the claims 9-13, wherein the duration of the first signal portion (R1) is chosen so that the total duration of that reset portion equals the length of the longest monopolar reset portion needed for a transition in the pixel.

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15. Drive means for driving an electrophoretic display device, the device comprising

- a plurality of pixels (2), each containing an amount of an electrophoretic material comprising a first and a second type of particles (6, 7), having mutually different charges, being dispersed in a fluid (11);
- a first and a second electrode (8, 9) associated with each pixel (4) for receiving a potential difference; and
- the drive means (10) being arranged for controlling said potential difference of each pixel

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(4);

wherein the charged particles (6, 7), depending on the applied potential difference, are able to occupy a position being one of extreme positions near the electrodes (8, 9) and intermediate positions in between the electrodes (8, 9) for displaying the picture, and

5 wherein said potential difference is controlled to be:

- during a reset portion (R), a reset potential difference for enabling particles (6, 7) to substantially occupy one of the extreme positions, and subsequently
- during a driving portion (D), a picture potential difference for enabling the particles (6, 7) to occupy the position corresponding to the image information,

10 the drive means being further arranged for applying,

- during said reset portion (R), a reset signal over said pixel (4), during which the first and second type of particles are brought in close proximity with each other.